LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

Volume 5 | Technical Appendices

CFA6 | South Ruislip to Ickenham

Data appendix (AQ-001-006)

Air quality

November 2013

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High Speed Two (HS2) Limited,
Eland House,
Bressenden Place,
London SW1E 5DU

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- discussion of the policy framework (Section 2);
- baseline air quality data (Section 3);
- dust impact evaluation and risk rating (Section 4);
- air quality assessment - road traffic (Section 5); and
- air quality assessment - rail head (Section 6)

1.1.2 Maps referred to throughout the air quality appendix are contained in the Volume 5, Air Quality Map Book.

2 Policy framework

2.1.1 The London Plan[1] forms the Regional Spatial Strategy for Greater London and integrates economic, environmental, transport and social frameworks. Specifically for air quality, it seeks to achieve reductions in pollutant emissions and minimise public exposure to pollution. Policy 7.14 of the London Plan sets out a number of objectives such as minimising increased exposure to existing poor air quality, the need to reduce emissions from demolition and construction activities using best practice and the provision of on-site mitigation measures during development.

2.1.2 The Mayor's Air Quality Strategy[2] and Supplementary Planning Guidance (SPG) on Sustainable Design and Construction[3] set out actions for improving London's air quality and include measures aimed at reducing emissions from transport and new developments. A key objective of the strategy is to make better use of the planning process so that new developments do not contribute to air pollution. Policy 3 also gives support to the expansion of competitive rail-based alternatives to aviation, including the development of a national high speed rail network.

2.1.3 At the local level, all five local planning authorities in the South Ruislip to Ickenham area have policies that seek to limit pollution levels, improve air quality and reduce emissions from development.

2.1.4 The London Borough of Hillingdon (LBHi) Local Plan[4] has several policies aimed at improving air quality. Policies EM1 and EM8 identify the need to mitigate air quality impacts around the road network and Heathrow Airport, which has a major contribution to poor air quality in Hillingdon.

2.1.5 Local and regional guidance relevant to the consideration of climate change adaptation and air quality is provided in the draft Climate Change Adaption Strategy for London[5].

[1] Greater London Authority (GLA) (2011), *The London Plan: Spatial Development Strategy for Greater London*, GLA, London.
[2] Greater London Authority (GLA) (2010) *Clearing the Air: The Mayor's Air Quality Strategy*, GLA, London.
[3] Greater London Authority (GLA) (2006), *Sustainable Design and Construction: The London Plan Supplementary Planning Guidance*, GLA, London.
[4] London Borough of Hillingdon (2012) *Hillingdon Local Plan:*
[5] Greater London Authority (GLA) (2010), *Draft Climate Change Adaptation Strategy for London*, GLA, London

3 Baseline air quality data

3.1 Existing air quality

Local authority review and assessment information

3.1.1 LBHi has a designated Air Quality Management Area (AQMA) covering much of its administrative area. Almost the entirety of the South Ruislip to Ickenham area is within this AQMA.

3.1.2 LBHi has an air quality action plan[6] (AQAP) in place aimed at improving air quality.

Local air quality monitoring data

3.1.3 Monitoring sites within the study area that are considered relevant for this assessment are shown in Map AQ-01-006 (Volume 5, Air Quality Map Book). Table 1 to Table 3 provide a summary of the recorded pollutant concentrations at these sites.

3.1.4 The pollutant concentrations can be compared to the air quality standards:

- 40µg/m^3 as an annual mean for NO2 and PM10;
- 200µg/m^3 one-hour mean for NO2 not to be exceeded more than 18 times a year (equivalent to the 99.8th percentile of the one-hour mean);
- 50µg/m^3 24-hour mean for PM10 not to be exceeded more than 35 times a year (equivalent to the 90.4th percentile of the 24-hour mean); and
- 25µg/m^3 as an annual mean for PM2.5.

Continuous monitoring

3.1.5 This section summarises the results from the continuous monitoring sites that are considered relevant for the assessment of air quality in this study area.

Table 1: Annual mean pollutant concentrations recorded at continuous monitoring sites[7]

Pollutant	Annual mean concentrations (µg/m^3)				
	2008	2009	2010	2011	2012
LBHi - London Heathrow LHR2 (508399, 176746)[8]					
NO2	53	50	50	50	47
PM10	24	23	24	25	24
PM2.5	No data	No data	11	11	11
LBHi - South Ruislip (510835, 184916)					
NO2	46	51	46	50	52
PM10	23	23	23	24	24

[6] London Borough of Hillingdon (2004) *Air Quality Action Plan.*
[7] Kings College London, *www.londonair.org.uk*, Accessed: May 2013
[8] PM2.5 monitoring commenced in 2010

Pollutant	Annual mean concentrations (µg/m^3)				
	2008	2009	2010	2011	2012
LBHi - Hillingdon Hospital (506990, 181925)[9]					
NO2	36	40	37	36	No data
PM10	21	20	21	22	No data
LBHi - London Hillingdon (Sipson Rd) (506900, 178600)					
NO2	51	54	53	55	57
LBHi - London Harmondsworth (505561, 177661)					
NO2	32	33	31	31	32
PM10	30	28	20	21	20
LBHi - Hillingdon Sipson (507750, 176750)					
NO2	38	39	38	37	35

Table 2: Number of hours when hourly mean NO2 concentrations exceed 200µg/m^3 at continuous monitoring sites[10,11]

Site	Number of exceedances of hourly mean NO2 standard				
	2008	2009	2010	2011	2012
LBHi - London Heathrow LHR2 (508399, 176746)	0 (164)	0 (136)	2 (151)	1 (139)	0 (128)
LBHi - South Ruislip (510835, 184916)	6 (173)	3 (165)	2 (156)	0 (147)	14 (184)
LBHi - Hillingdon Hospital (506990, 181925)	0 (125)	0 (124)	0 (119)	0 (117)	No data[9]
LBHi - London Hillingdon (Sipson Rd) (506900, 178600)	1 (158)	0 (145)	0 (149)	0 (158)	0 (151)
LBHi - London Harmondsworth (505561, 177661)	0 (117)	0 (107)	0 (101)	0 (116)	0 (122)
LBHi - Hillingdon Sipson (507750, 176750)	2 (130)	0 (122)	0 (121)	0 (126)	0 (113)

[9] Site closed 2012
[10] 99.8th percentile of hourly mean NO2 concentrations in brackets (µg/m^3)
[11] Kings College London, *www.londonair.org.uk*, Accessed: May 2013

Table 3: Number of days when daily mean PM10 concentrations exceed 50µg/m^3 at continuous monitoring sites[12,13]

Site	Number of exceedances of daily mean PM10 standard				
	2008	2009	2010	2011	2012
LBHi - London Heathrow LHR2 (508399, 176746)	17 (42)	8 (37)	3 (35)	8 (38)	13 (40)
LBHi - South Ruislip (510835, 184916)	13 (39)	12 (38)	4 (35)	6 (39)	6 (36)
LBHi - Hillingdon Hospital (506990, 181925)	10 (36)	3 (33)	1 (33)	0 (32)	No data[9]
LBHi - London Harmondsworth (505561, 177661)	32 (51)	22 (44)	2 (29)	9 (36)	5 (34)

Diffusion tubes

3.1.6 This section summarises the results from the diffusion tube sites that are considered relevant for the assessment of air quality in this study area.

Table 4: Annual mean NO2 concentrations recorded at diffusion tube monitoring sites[14, 15]

Site	Ordnance Survey coordinates	Annual mean NO2 concentrations (µg/m^3)				
		2008	2009	2010	2011	2012[16]
370 Sipson Road, Sipson	507143, 178037	45	46	45	45	Data not available
83 Hayes End Drive, Hayes End	508676, 182264	27	27	27	26	Data not available
Queensmead School, South Ruislip	511763, 185530	31	29	27	26	Data not available
Chamberlain Way, Eastcote	510811, 189636	26	26	28	25	Data not available
Citizens Advice Bureau, Eastcote Road, Ruislip	505739, 183871	31	30	28	28	Data not available
Kaduna Close, Eastcote	510495, 188749	29	28	29	25	Data not available
Sidmouth Drive, South Ruislip	510424, 186287	29	31	29	28	Data not available
Ratcliffe Close, Uxbridge	505638, 182525	29	29	29	27	Data not available

Greater London Authority maps

3.1.7 Greater London Authority (GLA) maps[17] of modelled pollution concentrations provide further context on the spatial pattern of air pollution across London and indications of

[12] 90.4th percentile of daily mean PM10 concentrations in brackets (µg/m^3)
[13] Kings College London, *www.londonair.org.uk*, Accessed: May 2013
[14] London Borough of Hillingdon (2011) *Air Quality Progress Report*.
[15] London Borough of Hillingdon (2012) *Air Quality Updating and Screening Assessment*.
[16] 2012 diffusion tube data not available from London Borough of Hillingdon website.

likely pollutant concentrations across the capital. Modelling, however, is less robust than monitoring data and may not fully take into account local characteristics that influence pollution levels.

3.1.8 GLA pollution maps estimate that annual NO2 concentrations exceed air quality standards around Heathrow Airport and at or near main roads within the Hillingdon borough especially along the M4. The maps show no significant change in NO2 concentrations from 2008 to 2011. The maps also indicate that the Great Western Main Line (GWML) railway makes a significant contribution to annual NO2 concentrations through LBHi.

3.1.9 Annual mean PM10 concentrations have reduced marginally at all locations between 2008 and 2011 according to the GLA modelling estimates, although not along main roads such as A406 North Circular Road, Hanger Lane, the M4 and Old Oak Common, which in 2011 were still exceeding the air quality standard of 40µg/m^3. The number of days on which the PM10 concentrations exceed the standard of 50µg/m^3 is estimated to have fallen between 2008 and 2011, although the frequency of exceedances is higher near busy roads.

3.1.10 PM2.5 exceedances across the boroughs are estimated to have decreased between 2008 and 2011 and are confined to locations along busy roads and in localised areas at Heathrow Airport – sites that are not likely to be representative of relevant exposure locations. The GWML railway is thought to make a significant contribution to PM2.5 exceedances concentrations along its route through LBHi, although future plans for electrification are expected to eliminate this source.

Background pollutant concentrations

3.1.11 Estimates of background air quality were obtained from the Department for Environment, Food and Rural Affairs (Defra) maps[18]. Background NO2 concentrations are close to or breaching air quality standards throughout the study area. Background PM10 concentrations are within air quality standards throughout the study area. NO2 annual mean concentrations were in the range 15.5µg/m^3 - 52.9µg/m^3 in 2012. PM10 annual mean concentrations were in the range 15.0µg/m^3 - 21.0µg/m^3 in 2012.

3.1.12 Defra background concentrations for the relevant assessment years were used in the Design Manual for Roads and Bridges (DMRB) [19] and ADMS-Roads assessments.

Local emission sources

3.1.13 The main source of pollution within the study area is road vehicles. Major roads include Western Avenue (A40), West End Road (A4180), Long Lane (A437) and Uxbridge Road (A4020). Other emission sources include permitted Part A[20, 21] processes at Ruislip Railway Depot, West End Road, Breakspear Road and New Years

[17] Greater London Authority (GLA) (2010) *London Atmospheric Emissions Inventory 2008 Concentration Maps*; http://data.london.gov.uk/laei-2008-concentration-maps; Accessed: May 2013.
[18] Department for Environment, Food and Rural Affairs (Defra) (2012) *Defra background maps* 2010; http://laqm.defra.gov.uk/maps/maps2010.html; Accessed: July 2013.
[19] Highways Agency, (2007), *The Design Manual for Roads and Bridges (Volume 11, Section 3, Part 1 Air Quality HA207/07)*
[20] *Pollution Prevention and Control Act 1999* London, Her Majesty's Stationery Office
[21] *The Environmental Permitting (England and Wales) Regulations 2010*, London, Her Majesty's Stationery Office

Green Lane[22]. Due to the nature of their emissions, it is unlikely that these will have an effect on local air quality. Contributions to local pollutant concentrations made by these industrial installations are included within background concentrations used in this assessment.

3.2 Receptors

Human

Construction phase

3.2.1 Potential receptors are primarily those residential properties close to construction activity and alongside roads where traffic flows will change as a consequence of construction activity. Notable receptors close to construction activity include properties at Trenchard Avenue and The Greenway. Receptors at greatest risk of dust effects are indicated in Map AQ-02-006-01 (Volume 5, Air Quality Map Book).

Operational phase

3.2.2 There is a high number of human receptors in the South Ruislip to Ickenham area and high densities of residential properties. Several sensitive receptors identified along the route include schools and nurseries near to the route, such as Ruislip High School, Eilmar Montessori School and Day Nursery, Bourne Primary School, Queensmead School, Ruislip Gardens Primary School, Sacred Heart Primary School, Growing Tree Nursery and Breakspear Junior School.

Ecological

Construction phase

3.2.3 There are no ecological receptors with statutory designations within the study area likely to be affected by the Proposed Scheme during construction.

Operational phase

3.2.4 There are no ecological receptors with statutory designations within the study area likely to be affected by the Proposed Scheme during operation.

[22] Environment Agency, *What's in your Backyard?*; http://www.environment-agency.gov.uk/wiyby; Accessed: August 2013.

4 Dust impact evaluation and risk rating

4.1.1 The following sections provide details of the assessment of construction impacts following the Institute of Air Quality Management (IAQM) guidance[23]. Where considered useful to identify receptors and their relationship to the construction activity, a specific figure is provided and referenced. On-site haul movements were assessed explicitly.

4.1.2 The dust assessment criteria for the haul route are based on those for earthworks, as set out in the IAQM guidance. This emission phase was considered to be the most applicable, as the assessment of impacts from earthworks will depend, in part, on the passage of vehicles over open surfaces. It was assumed that significant effects would not occur beyond a distance of 50m from the haul route, again based on interpretation of the earthworks criteria, and that all areas of the haul route will be subject to more than 10 vehicle movements per day. On the basis of criteria for earthworks within the IAQM guidance, the dust emission class for the haul route is large. Wherever there are receptors within 50m of a haul route, the sensitivity of the receiving environment was derived using the IAQM guidance. The need for, and capability of, the local environmental management plan (LEMP) to control these dust emissions, as directed by the draft Code of Construction Practice[24] (CoCP), was then considered in forming the conclusion of the assessment.

Table 5: Evaluation and risk rating of construction activities

Activity	Distance to nearest receptor	Dust emission class	Dust risk category	Sensitivity of surrounding area	Magnitude of impact (with draft CoCP mitigation measures)	Principal justifications
South Ruislip vent shaft (no sensitive receptors identified within 20m of site)						
Demolition	N/A	N/A	N/A	N/A	N/A	1. No demolitions required; land currently unoccupied brownfield site.
Earthworks	20-50m	Large	High	Low	Negligible	1. Site area larger than 10,000m^2 Potentially dusty soil type 2. No receptors within 20m of site
Construction	20-50m	Medium	Medium	Low	Negligible	1. Assumed less than 25,000m^3 building material volume

[23] Institute of Air Quality Management (IAQM), (2011), *Guidance on the assessment of the impacts of construction on air quality and the determination of their significance*
[24] Volume 5: Appendix CT-003-000

Activity	Distance to nearest receptor	Dust emission class	Dust risk category	Sensitivity of surrounding area	Magnitude of impact (with draft CoCP mitigation measures)	Principal justifications
						Use of potentially dusty construction materials 2. No receptors within 20m of site
Trackout	20-50m	Large	Medium	Low	Negligible	1. More than 100 heavy goods vehicle (HGV) trips per day. 2. No receptors within 20m of site
West Ruislip tunnel portal (Map AQ-02-006-01, Figure 6.1, (Volume 5, Air Quality Map Book))						
Demolition	20-100m	Small	Low	Low	Negligible	1. Less than 20,000 m^3 waste generated during demolition 2. No receptors within 20m of site
Earthworks	20-50m	Large	High	Low	Negligible	1. Site area larger than 10,000m^2 Potentially dusty soil type 2. No receptors within 20m of site
Construction	20-50m	Medium	Medium	Low	Negligible	1. 25,000 m^3-100,000 m^3 building material volume Potentially dusty construction material (ready-mix concrete) 2. No receptors within 20m of site
Trackout	Less than 20m	Large	High	Medium	Negligible	1. More than 100 HGV trips per day Unpaved road length greater than 100m 2. Fewer than 10 receptors within 20m of trackout
Haul route	20-50m	Large	High	Low	Negligible	1. Site area larger than 10,000m^2 Potentially dusty soil type 2. No receptors within 20m of haul route

Activity	Distance to nearest receptor	Dust emission class	Dust risk category	Sensitivity of surrounding area	Magnitude of impact (with draft CoCP mitigation measures)	Principal justifications
River Pinn and Breakspear Road bridges (Map AQ-02-006-01, Figure 6.2, (Volume 5, Air Quality Map Book))						
Demolition	Less than 20m	Small	Medium	Medium	Negligible	1. Less than 20,000 m^3 waste generated during demolition 2. More than 10 receptors within 20m of site
Earthworks	N/A	N/A	N/A	N/A	N/A	1. No earthworks required for bridge replacement
Construction	Less than 20m	Medium	High	Medium	Negligible	1. Assumed less than 25,000 m^3 building material volume Potentially dusty construction material 2. More than 10 receptors within 20m of site
Trackout	20-50m	Small	Low	Low	Negligible	1. Assumed fewer than 25 HGV trips per day 2. No receptors within 20m of trackout
West Ruislip rail head (including Harvil Road realignment and sustainable placement areas) (Map AQ-02-006-01, Figure 6.3 (Volume 5, Air Quality Map Book))						
Demolition	20-100m	Small	Low	Low	Negligible	1. Less than 20,000 m^3 waste generated during demolition 2. No receptors within 20m of site
Earthworks	Less than 20m	Large	High	Medium	Negligible	1. Site area larger than 10,000m^2 Total material moved greater than 100,000t 2. Fewer than ten receptors within 20m of the site
Construction	20-50m	Large	High	Low	Negligible	1. Assumed greater than 100,000 m^3 building material volume Concrete batching on site (segment-casting facility at Harvil

Activity	Distance to nearest receptor	Dust emission class	Dust risk category	Sensitivity of surrounding area	Magnitude of impact (with draft CoCP mitigation measures)	Principal justifications
						Road) 2. No receptors within 20m of site
Trackout	Less than 20m	Large	High	Medium	Negligible	1. More than 100 HGV trips per day Conveyors used to move spoil north to sustainable placement areas. 2. Fewer than 10 receptors within 20m of trackout
Haul route	20-50m	Large	High	Low	Negligible	1. Site area larger than 10,000m^2 Total material moved greater than 100,000t 2. No receptors within 20m of site

Table 6: Summary of construction dust impacts and effects

Location	Magnitude of impact	Effect of dust-generating activities	Additional mitigation
South Ruislip vent shaft	Negligible	Not significant	None required
West Ruislip tunnel portal	Negligible	Not significant	None required
River Pinn and Breakspear Road bridges	Negligible	Not significant	None required
West Ruislip railhead (including Harvil Road realignment and sustainable placement areas)	Negligible	Not significant	None required

5 Air quality assessment - road traffic

5.1 Overall assessment approach

5.1.1 The air quality assessment for road-related emissions has considered the use of three different approaches based on the scale of changes in traffic and road alignment. Where the DMRB[19] thresholds detailed in the Scope and Methodology Report (SMR) (Volume 5: Appendix CT-001-000/1) are not exceeded, no additional assessment is required, as the air quality impacts will be minimal. If these thresholds are breached then a quantitative assessment has been carried out

5.1.2 Where the road configuration is straightforward, the DMRB screening method has been used to predict changes in air quality. Where the road layout is considered to be complex or where the use of the DMRB screening method indicated that there will be a potential exceedance of air quality standards, the atmospheric dispersion model ADMS-Roads has been used for the assessment. Professional judgment has been used to select the appropriate tool for each area.

5.1.3 In this study area both the DMRB screening method and the ADMS-Roads model were used for the assessment.

Assessing congestion

5.1.4 To assess the impact of congestion on the DMRB assessment, an additional DMRB assessment was carried out that modelled congested situations. This assumed a speed of 10kph in all scenarios for all links where the speed in the traffic model exceeded 10kph, in order to identify locations where queuing traffic might give rise to higher concentrations and require further assessment. The results of this additional assessment are presented alongside the main results.

5.1.5 For the ADMS-Roads modelling, where speed data were available, queues were assumed to occur on roads with an average speed of less than 50% of the speed limit. Queue speeds of 5kph were assumed. A queue length of 25-50m was assumed, depending on the speed on the road[25]. In the absence of information on the occurrence of queuing, it was assumed that queuing occurred between 7am and 7pm.

5.2 Model inputs and verification

Model parameters for detailed assessment

5.2.1 The ADMS-Roads model was used for the detailed assessment. A surface roughness length of 1.5m, surface roughness at meteorological site of 0.2m, minimum Monin Obukhov length of 100m and latitude of 51.5 degrees were used in the detailed assessment. All other model parameters were model default settings. Meteorological data from the London Heathrow monitoring site was used.

[25] Queue length (in metres) was calculated using the following formula: l = 50 -((v/0.5vl) x 25), where l = queue length, v = road speed, vl = speed limit

Model verification

5.2.2 Since the model predicts nitrogen oxide (NOx) contributions for the modelled roads, this was initially compared to the NOx road contribution derived from NOx concentrations (where available) measured at monitoring sites and Defra background maps. Monitoring sites were chosen from across the traffic model area, which extends east of the study area. Sites where nearby busy roads were not included in the traffic model data set or where monitored road NOx was found to be negative were excluded from assessment. The results of this comparison are shown in Table 7.

Table 7: Comparison of monitored and modelled NOx concentrations for verification

Site	Ordnance Survey co-ordinates	Monitored total NO_2	Monitored total NOx	Background NO_2	Background NOx	Monitored road NOx	Modelled road NOx	Monitored/modelled road NOx
LBB - Ikea (AURN)	520866, 185169	76.0	257.4	31.5	56.0	201.4	44.7	4.5
LBB - John Keble Primary School	521619, 183554	41.1	86.7	35.7	67.0	19.7	14.9	1.3
LBE - Hanger Lane Gyratory (AURN)	518537, 182708	95.0	324.6	37.1	69.2	255.4	36.2	7.1
LBE - Western Avenue (AURN)	520430, 181950	73.3	184.8	38.6	74.6	110.2	35.4	3.1
LBHi - South Ruislip (AURN)	510835, 184916	52.1	111.7	26.5	43.7	68.0	12.2	5.6
LBHi - Oxford Avenue (AURN)	509551, 176974	44.1	78.4	36.2	69.2	9.2	3.3	2.8
LBHa - Pinner Road (AURN)	513504, 188998	46.8	110.4	24.0	39.1	71.3	6.3	11.3
RBKC - Cromwell Road (AURN)	526524, 178965	69.1	155.9	43.8	82.4	73.5	11.4	6.5
RBKC - Knightsbridge (AURN)	527518, 179395	92.3	229.2	46.2	87.4	141.8	21.3	6.7
RBKC - Kings Road (AURN)	527268, 178089	92.6	224.3	43.8	82.8	141.4	15.8	9.0
LBB - junction	521447, 188730	54.0	N/A	28.8	49.6	49.9	16.1	3.1

Site	Ordnance Survey co-ordinates	Monitored total NO2	Monitored total NOx	Background NO2	Background NOx	Monitored road NOx	Modelled road NOx	Monitored/modelled road NOx
of Kingsbury Road and Edgware Road								
LBB - junction of North Circular Road and Chartley Avenue	521222, 186122	93.0	N/A	33.7	60.3	175.2	47.8	3.7
LBB - junction of Dudden Hill Lane and High Road	522191, 184821	60.0	N/A	31.9	56.8	59.4	33.5	1.8
LBB - junction of Dollis Hill Lane and Edgware Road	523192, 186570	76.0	N/A	31.8	56.4	114.3	23.4	4.9
LBB - Chichele Road, near Anson Road	523692, 185372	65.0	N/A	31.8	56.4	75.8	15.3	5.0
LBB - High Street, Harlesden	521743, 183361	76.0	N/A	35.7	67.0	100.5	33.9	3.0
LBB - Kilburn Bridge	525461, 183558	101.0	N/A	36.6	68.5	196.5	20.2	9.7
LBE - Horn Lane AQMS (co-located triplicate)	520432, 181428	52.0	N/A	38.6	74.6	16.7	13.6	1.2

Site	Ordnance Survey co-ordinates	Monitored total NO2	Monitored total NOx	Background NO2	Background NOx	Monitored road NOx	Modelled road NOx	Monitored/modelled road NOx
LBE - 326 Western Avenue	520424, 181957	59.0	N/A	38.6	74.6	35.9	33.0	1.1
LBE - 57 - 75 Old Oak Common Lane	521557, 180996	49.0	N/A	36.1	66.9	17.1	15.0	1.1
LBE - 39 Old Oak Lane	521587, 182684	50.0	N/A	36.2	69.4	17.0	13.0	1.3
LBE - 5 Leamington Park	520532, 181517	46.0	N/A	38.6	74.6	1.8	19.2	0.1
LBHF - Westway	522548, 180960	77.0	N/A	36.9	66.7	104.5	38.1	2.7
LBHF - Hammersmith Broadway	523327, 178484	77.0	N/A	45.5	86.3	80.0	29.8	2.7
LBHF - Talgarth Road	524150, 178363	56.0	N/A	43.7	82.2	19.3	34.9	0.6
LBHF - Uxbridge Road	522861, 180061	43.0	N/A	36.9	66.7	2.6	8.0	0.3
RBKC - Earls Court Station	525548, 178556	101.0	N/A	45.7	87.1	171.1	40.3	4.2
RBKC - Chatsworth Court	525263, 178936	51.0	N/A	45.7	87.1	1.3	10.2	0.1
RBKC - Sloane Square	528011, 178675	81.0	N/A	45.2	85.0	95.8	19.7	4.9

Site	Ordnance Survey co-ordinates	Monitored total NO2	Monitored total NOx	Background NO2	Background NOx	Monitored road NOx	Modelled road NOx	Monitored/modelled road NOx
RBKC - Chelsea Physic Garden (Gate)	527726, 177727	59.0	N/A	40.0	72.8	37.9	14.6	2.6
RBKC - Sloane Avenue	527411, 178659	56.0	N/A	43.8	82.8	18.7	8.0	2.3
RBKC - Cromwell Road (Natural History Museum)	526550, 178968	70.0	N/A	43.8	82.4	60.9	8.3	7.4
RBKC - junction of Pavillion Street and Sloane Avenue	527889, 179145	54.0	N/A	46.2	87.4	8.7	11.1	0.8
RBKC - junction of Kensington High Street and Kensington Church Street	525630, 179674	62.0	N/A	43.8	83.2	35.1	18.2	1.9
RBKC - junction of Fulham Road and Limerston St	526377, 177867	55.0	N/A	43.1	80.6	18.4	10.9	1.7
RBKC - Warwick Road	524825, 178902	50.0	N/A	43.7	82.2	3.9	13.6	0.3
RBKC - Ladbroke Grove / North Kensington Library	524342, 181271	53.0	N/A	43.3	83.3	10.3	27.0	0.4

Site	Ordnance Survey co-ordinates	Monitored total NO2	Monitored total NOx	Background NO2	Background NOx	Monitored road NOx	Modelled road NOx	Monitored/modelled road NOx
RBKC - junction of Cromwell Road and Earls Court Road	525355, 178841	84.0	N/A	45.7	87.1	104.3	46.0	2.3

5.2.3 The calculated model adjustment factor for the road contribution of NOx was 3.4. This was applied to all NOx results from the ADMS-Roads modelling. This is line with Defra guidance[26] on model verification.

5.2.4 A final check was then made to compare the total NO2 concentrations from the modelling to the monitored data. This is shown in Table 8.

Table 8: Comparison of monitored and modelled annual average NO2 concentrations

Site	Monitored concentration (µg/m^3)	Modelled concentration (µg/m^3)	Difference ((modelled - monitored)/monitored) x 100
LBB - Ikea (AURN)	76.0	81.2	7%
LBB - John Keble Primary School	41.1	55.5	35%
LBE - Hanger Lane Gyratory (AURN)	95.0	78.1	-18%
LBE - Western Avenue (AURN)	73.3	78.6	7%
LBHi - South Ruislip (AURN)	52.1	44.1	-15%
LBHi - Oxford Avenue (AURN)	44.1	41.0	-7%
LBHa - Pinner Road (AURN)	46.8	33.8	-28%
RBKC - Cromwell Road (AURN)	69.1	58.6	-15%
RBKC - Knightsbridge (AURN)	92.3	71.4	-23%
RBKC - Kings Road (AURN)	92.6	63.6	-31%
LBB - junction of Kingsbury Road and Edgware Road	54.0	51.0	-6%
LBB - junction of North Circular Road and Chartley Avenue	93.0	85.6	-8%
LBB - junction of Dudden Hill Lane and High Road	60.0	71.4	19%
LBB - junction of Dollis Hill Lane and Edgware Road	76.0	61.4	-19%
LBB - Chichele Road, near Anson Road	65.0	52.5	-19%
LBB - High Street, Harlesden	76.0	74.9	-1%
LBB - Kilburn Bridge	101.0	62.1	-38%
LBE - Horn Lane AQMS (co-located triplicate)	52.0	56.6	9%

[26] Department for Environment, Food and Rural Affairs (2009) *Technical Guidance Note LAQM TG (09)*

Site	Monitored concentration (µg/m^3)	Modelled concentration (µg/m^3)	Difference ((modelled - monitored)/monitored) x 100
LBE - 326 Western Avenue	59.0	76.4	30%
LBE - 57 - 75 Old Oak Common Lane	49.0	56.0	14%
LBE - 39 Old Oak Lane	50.0	53.8	8%
LBE - 5 Leamington Park	46.0	62.8	36%
LBHF - Westway	77.0	79.7	3%
LBHF - Hammersmith Broadway	77.0	79.0	3%
LBHF - Talgarth Road	56.0	82.2	47%
LBHF - Uxbridge Road	43.0	48.2	12%
RBKC - Earls Court Station	101.0	88.6	-12%
RBKC - Chatsworth Court	51.0	58.9	15%
RBKC - Sloane Square	81.0	69.0	-15%
RBKC - Chelsea Physic Garden (Gate)	59.0	58.9	0%
RBKC - Sloane Avenue	56.0	54.6	-2%
RBKC - Cromwell Road (Natural History Museum)	70.0	54.9	-22%
RBKC - junction of Pavillion Street and Sloane Avenue	54.0	60.4	12%
RBKC - junction of Kensington High Street and Kensington Church Street	62.0	66.2	7%
RBKC - junction of Fulham Road and Limerston Street	55.0	57.3	4%
RBKC - Warwick Road	50.0	61.1	22%
RBKC - Ladbroke Grove / North Kensington Library	53.0	74.5	41%
RBKC - junction of Cromwell Road and Earls Court Road	84.0	93.4	11%

5.2.5 As the majority of modelled NO2 concentrations were within 25% of the monitored concentrations, no further adjustment was undertaken.

5.3 Construction traffic model

5.3.1 Roads assessed for construction traffic and associated traffic flows and speeds are detailed in Volume 5: Appendix TR-001-000. Scenarios assessed correspond to two peak phases of construction:

- test 1, representing construction traffic movements in January 2018 of the construction programme; and
- test 2, representing construction traffic movements in April to June 2024 of the construction programme.

Receptors assessed

5.3.2 For all road links where DMRB criteria for assessing local air quality were met due to increased traffic flows, a number of receptors representative of worst-case exposure locations were selected for assessment. These included locations representative of highest pollutant concentrations along the roads, including closest to junctions or to the road itself.

5.3.3 All receptors where DMRB screening identified a likely moderate adverse or substantial adverse impact were also modelled within ADMS-Roads. Additional receptors close to DMRB receptors identifying moderate adverse or substantial adverse impacts were added for the ADMS-Roads assessment, in order to ensure that worst-case exposure locations were captured.

5.3.4 Receptors assessed are presented in Table 9 and in Map AQ-01-006 (Volume 5, Air Quality Map Book).

Table 9: Modelled receptors (construction phase)

Receptor	Description/location	Ordnance Survey coordinates	Scenarios assessed with the Proposed Scheme	
			DMRB assessment	ADMS-Roads assessment
6-1	New Years Green Lane Civic Amenity Site,	506123, 188243	Test 1, test 2	-
6-2	The Atrium 1, Harefield Road	505275, 184360	Test 1, test 2	-
6-3	Vyners School, Warren Road	506717, 185460	Test 1, test 2	-
6-4	28 Chamberlain Way	510841, 189608	Test 2	-
6-5	2 Swakeleys Road	507941, 186227	Test 1, test 2	Test 1, test 2
6-6	Crows Nest Farm, Breakspear Road South	507615, 187863	Test 1, test 2	-
6-7	12A Long Lane	507951, 186166	Test 1, test 2	-
6-8	195 Swakeleys Road	506600, 186094	Test 1, test 2	Test 1, test 2
6-9	90 Oxford Road	505214, 184543	Test 1, test 2	-
6-10	9 Woodhall Close	506013, 185520	Test 1, test 2	Test 1, test 2
6-11	White Bear, Ickenham Road	508824, 187066	Test 1, test 2	-
6-12	1A Bridge Way	507701, 185279	Test 1, test 2	-

Receptor	Description/location	Ordnance Survey coordinates	Scenarios assessed with the Proposed Scheme	
			DMRB assessment	ADMS-Roads assessment
6-13	46 The Grove	507162, 185225	Test 1, test 2	-
6-14	Harrow Fencing Co, Long Lane	507673, 185027	Test 1, test 2	-
6-15	61 Vicarage Road	510829, 196079	Test 2	-
6-16	98 Long Lane	507693, 185321	Test 1, test 2	-
6-17	335A Long Lane	507612, 184827	Test 1, test 2	-
6-18	253 Park Road	506166, 185474	Test 1, test 2	Test 1, test 2
6-19	Glenthorn, Hempstead Road	508500, 199676	Test 1, test 2	-
6-20	218 Swakeleys Road	506574, 186136	-	Test 1, test 2
6-21	205 Swakeleys Road	506573, 186058	-	Test 1, test 2
6-22	16 Shorediche Close	506644, 186132	-	Test 1, test 2
6-23	Woodside, Park Road	506219, 185452	-	Test 1, test 2
6-24	Oakwood, Warren Road	506231, 185626	-	Test 1, test 2
6-25	8A Woodhall Close	505942, 185515	-	Test 1, test 2
6-26	247 Harefield Road	506165, 185423	-	Test 1, test 2
6-27	4 Long Lane	507937, 186190	-	Test 1, test 2
6-28	2-4 High Road	507993, 186204	-	Test 1, test 2
6-29	6-8 Swakeleys Road	507882, 186252	-	Test 1, test 2
6-30	15A Swakeleys Road	507883, 186218	-	Test 1, test 2
6-31	279 Swakeleys Road	506246, 185664	-	Test 1, test 2
6-32	259 Swakeleys Road	506334, 185817	-	Test 1, test 2
6-33	1 Roker Park Avenue	506442, 185961	-	Test 1, test 2
6-34	211 Swakeleys Road	506520, 186023	-	Test 1, test 2

Background concentrations

5.3.5 The background concentrations used in the DMRB and ADMS-Roads assessments are shown in Table 10 and Table 11 taken from the Defra maps[18].

Table 10: Background 2012 concentrations at assessed receptors

Receptor (or zone of receptors)	Concentrations (µg/m^3)		
	NOx	NO2	PM10
(6-1) New Years Green Lane Civic Amenity Site	25.0	16.5	15.1
(6-2) The Atrium 1, Harefield Road	52.2	29.6	18.3
(6-3) Vyners School, Warren Road	43.2	26.0	18.4

Receptor (or zone of receptors)	Concentrations (µg/m^3)		
	NOx	NO2	PM10
(6-4) 28 Chamberlain Way	32.4	20.7	16.0
(6-5) 2 Swakeleys Road	35.2	22.0	16.4
(6-6) Crows Nest Farm, Breakspear Road South	27.8	18.0	15.4
(6-7) 12A Long Lane	35.2	22.0	16.4
(6-8) 195 Swakeleys Road	31.0	19.8	15.9
(6-9) 90 Oxford Road	52.2	29.6	18.3
(6-10) 9 Woodhall Close	43.2	26.0	18.4
(6-11) White Bear, Ickenham Road	34.1	21.4	16.3
(6-12) 1A Bridge Way	42.4	25.7	18.2
(6-13) 46 The Grove	42.4	25.7	18.2
(6-14) Harrow Fencing Co, Long Lane	42.4	25.7	18.2
(6-15) 61 Vicarage Road	42.0	25.2	18.0
(6-16) 98 Long Lane	42.4	25.7	18.2
(6-17) 335A Long Lane	40.8	24.8	17.7
(6-18) 253 Park Road	43.2	26.0	18.4
(6-19) Glenthorn, Hempstead Road	28.8	18.4	16.7
(6-20) 218 Swakeleys Road	31.0	19.8	15.9
(6-21) 205 Swakeleys Road	31.0	19.8	15.9
(6-22) 16 Shorediche Close	31.0	19.8	15.9
(6-23) Woodside, Park Road	43.2	26.0	18.4
(6-24) Oakwood, Warren Road	43.2	26.0	18.4
(6-25) 8A Woodhall Close	46.4	27.4	18.6
(6-26) 247 Harefield Road	43.2	26.0	18.4
(6-27) 4 Long Lane	35.2	22.0	16.4
(6-28) 2-4 High Road	35.2	22.0	16.4
(6-29) 6-8 Swakeleys Road	35.2	22.0	16.4
(6-30) 15A Swakeleys Road	35.2	22.0	16.4
(6-31) 279 Swakeleys Road	43.2	26.0	18.4
(6-32) 259 Swakeleys Road	43.2	26.0	18.4
(6-33) 1 Roker Park Avenue	43.2	26.0	18.4
(6-34) 211 Swakeleys Road	31.0	19.8	15.9

Table 11: Background 2017 concentrations at assessed receptors

Receptor (or zone of receptors)	Concentrations (µg/m^3)		
	NOx	**NO2**	**PM10**
(6-1), New Years Green Lane Civic Amenity Site	20.1	13.6	14.3
(6-2) The Atrium 1, Harefield Road	41.4	24.8	17.0
(6-3) Vyners School, Warren Road	33.1	21.0	17.3
(6-4) 28 Chamberlain Way	25.9	17.2	15.1
(6-5) 2 Swakeleys Road	28.0	18.2	15.4
(6-6) Crows Nest Farm, Breakspear Road South	22.3	14.9	14.5
(6-7) 12A Long Lane	28.0	18.2	15.4
(6-8) 195 Swakeleys Road	24.7	16.4	15.0
(6-9) 90 Oxford Road	41.4	24.8	17.0
(6-10) 9 Woodhall Close	33.1	21.0	17.3
(6-11) White Bear, Ickenham Road	27.1	17.7	15.3
(6-12) 1A Bridge Way	32.7	20.8	17.1
(6-13) 46 The Grove	32.7	20.8	17.1
(6-14) Harrow Fencing Co, Long Lane	32.7	20.8	17.1
(6-15) 61 Vicarage Road	33.6	21.2	16.9
(6-16) 98 Long Lane	32.7	20.8	17.1
(6-17) 335A Long Lane	32.0	20.4	16.6
(6-18) 253 Park Road	33.1	21.0	17.3
(6-19) Glenthorn, Hempstead Road	22.1	14.7	15.9
(6-20) 218 Swakeleys Road	24.7	16.4	15.0
(6-21) 205 Swakeleys Road	24.7	16.4	15.0
(6-22) 16 Shorediche Close	24.7	16.4	15.0
(6-23) Woodside, Park Road	33.1	21.0	17.3
(6-24) Oakwood, Warren Road	33.1	21.0	17.3
(6-25) 8A Woodhall Close	36.0	22.6	17.5
(6-26) 247 Harefield Road	33.1	21.0	17.3
(6-27) 4 Long Lane	28.0	18.2	15.4
(6-28) 2-4 High Road	28.0	18.2	15.4
(6-29) 6-8 Swakeleys Road	28.0	18.2	15.4
(6-30) 15A Swakeleys Road	28.0	18.2	15.4

Receptor (or zone of receptors)	Concentrations (µg/m^3)		
	NOx	**NO2**	**PM10**
(6-31) 279 Swakeleys Road	33.1	21.0	17.3
(6-32) 259 Swakeleys Road	33.1	21.0	17.3
(6-33) 1 Roker Park Avenue	33.1	21.0	17.3
(6-34) 211 Swakeleys Road	24.7	16.4	15.0

Design Manual for Roads and Bridges model results

5.3.6 This section provides the summary of the modelled pollutant concentrations for the assessed receptors. The magnitude of change and impact descriptor are also derived following the Environmental Protection UK (EPUK) methodology[27].

Table 12: Summary of DMRB annual mean NO2 results (construction phase)

Receptor	NO2 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Magnitude of change	Impact descriptor
	2012 baseline	2017 without Proposed Scheme	2017 with Proposed Scheme[28]			
6-1	19.0	15.4	17.4	2.0	Small	Negligible
6-2	40.1	32.8	32.9	0.1	Imperceptible	Negligible
6-3	24.8	20.0	20.1	0.1	Imperceptible	Negligible
6-4	20.2	16.7	16.7	0.0	Imperceptible	Negligible
6-5	38.6	29.5	30.5	1.0	Small	Negligible
6-6	26.0	21.0	21.4	0.4	Small	Negligible
6-7	30.6	24.1	24.8	0.6	Small	Negligible
6-8	43.7	34.2	40.3	6.1	Large	Substantial adverse
6-9	55.0	45.2	45.9	0.7	Small	Slight adverse
6-10	41.3	31.8	33.1	1.4	Small	Negligible
6-11	40.5	30.9	31.5	0.6	Small	Negligible
6-12	38.2	30.2	30.9	0.6	Small	Negligible
6-13	25.7	20.7	20.8	0.1	Imperceptible	Negligible
6-14	51.1	40.3	41.0	0.7	Small	Slight adverse

[27] Environmental Protection UK (EPUK), (2010), *Development Control: Planning for Air Quality*
[28] Concentrations presented represent the highest of the three test scenarios

Receptor	NO2 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Magnitude of change	Impact descriptor
	2012 baseline	2017 without Proposed Scheme	2017 with Proposed Scheme[28]			
6-15	51.3	42.8	43.0	0.2	Imperceptible	Negligible
6-16	33.3	25.8	26.5	0.6	Small	Negligible
6-17	42.9	34.6	36.1	1.4	Small	Slight adverse
6-18	50.1	39.0	41.1	2.1	Medium	Moderate adverse
6-19	24.2	18.6	19.3	0.7	Small	Negligible

Table 13: Summary of DMRB annual mean PM10 results (construction phase)

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Magnitude of change	Impact descriptor
	2012 baseline	2017 without Proposed Scheme	2017 with Proposed Scheme			
6-1	14.6	14.5	14.6	0.1	Imperceptible	Negligible
6-2	18.4	18.2	18.2	0.0	Imperceptible	Negligible
6-3	17.9	17.8	17.8	0.0	Imperceptible	Negligible
6-4	15.2	15.2	15.2	0.0	Imperceptible	Negligible
6-5	18.1	17.6	17.7	0.0	Imperceptible	Negligible
6-6	16.1	15.9	15.9	0.0	Imperceptible	Negligible
6-7	17.1	16.9	16.9	0.1	Imperceptible	Negligible
6-8	18.3	17.9	18.3	0.5	Small	Negligible
6-9	22.4	21.9	22.1	0.2	Imperceptible	Negligible
6-10	21.5	21.1	21.4	0.3	Imperceptible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Magnitude of change	Impact descriptor
	2012 baseline	2017 without Proposed Scheme	2017 with Proposed Scheme			
6-11	18.7	18.2	18.2	0.1	Imperceptible	Negligible
6-12	19.4	19.1	19.2	0.1	Imperceptible	Negligible
6-13	17.8	17.8	17.8	0.0	Imperceptible	Negligible
6-14	23.8	23.1	23.2	0.2	Imperceptible	Negligible
6-15	22.2	21.1	21.2	0.0	Imperceptible	Negligible
6-16	18.7	18.4	18.6	0.1	Imperceptible	Negligible
6-17	20.0	19.2	19.4	0.2	Imperceptible	Negligible
6-18	20.7	20.2	20.3	0.1	Imperceptible	Negligible
6-19	17.3	17.1	17.1	0.0	Imperceptible	Negligible

5.3.7 Additional receptors identified from the DMRB congested situation assessment as moderate or substantial adverse, which were not identified as such in the main DMRB assessment, are shown in Table 14.

Table 14: Summary of DMRB annual mean NO_2 results for DMRB congested situation assessment not identified by main DMRB assessment (construction phase)

Receptor	NO_2 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Magnitude of change	Impact descriptor
	2012 baseline	2017 without Proposed Scheme	2017 with Proposed Scheme			
6-5	-	39.7	42.4	2.7	Medium	Moderate adverse
6-10	-	51.6	56.9	5.3	Large	Substantial adverse

Detailed modelling results

5.3.8 This section provides the summary of the modelled pollutant concentrations for the assessed receptors. The magnitude of change and impact descriptor are also derived following the EPUK methodology[27]. Results presented correspond to the greatest impact at each receptor from the construction traffic scenarios assessed.

Table 15: Summary of ADMS-Roads annual mean NO2 results (construction phase)

Receptor	NO2 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Magnitude of change	Impact descriptor
	2012 baseline	2017 without Proposed Scheme	2017 with Proposed Scheme			
6-5	48.4	40.2	41.2	1.1	Small	Slight adverse
6-8	50.8	43.0	48.3	5.2	Large	Substantial adverse
6-10	53.3	45.9	49.7	3.9	Medium	Moderate adverse
6-18	61.1	52.4	55.5	3.2	Medium	Moderate adverse
6-20	48.0	40.7	46.6	5.9	Large	Substantial adverse
6-21	46.0	39.1	45.2	6.1	Large	Substantial adverse
6-22	54.3	46.0	50.5	4.5	Large	Substantial adverse
6-23	62.1	53.9	55.8	1.8	Small	Slight adverse
6-24	80.6	67.8	78.4	10.5	Large	Substantial adverse
6-25	49.7	43.6	46.6	3.1	Medium	Moderate adverse
6-26	51.9	45.3	46.7	1.4	Small	Slight adverse
6-27	47.4	39.6	40.6	1.0	Small	Slight adverse
6-28	43.9	37.6	38.6	1.0	Small	Slight adverse
6-29	43.8	36.7	37.5	0.8	Small	Slight adverse
6-30	47.6	39.3	40.2	0.9	Small	Slight adverse

Receptor	NO2 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Magnitude of change	Impact descriptor
	2012 baseline	2017 without Proposed Scheme	2017 with Proposed Scheme			
6-31	72.3	61.0	69.2	8.2	Large	Substantial adverse
6-32	64.8	54.9	62.4	7.5	Large	Substantial adverse
6-33	60.1	51.6	60.7	9.1	Large	Substantial adverse
6-34	53.0	44.6	53.5	8.9	Large	Substantial adverse

Table 16: Summary of ADMS-Roads annual mean PM10 results (construction phase)

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Magnitude of change	Impact descriptor
	2012 baseline	2017 without Proposed Scheme	2017 with Proposed Scheme			
6-5	19.5	18.0	18.0	0.0	Imperceptible	Negligible
6-8	19.6	18.2	18.5	0.3	Imperceptible	Negligible
6-10	23.2	21.6	22.0	0.4	Imperceptible	Negligible
6-18	24.5	22.7	22.9	0.3	Imperceptible	Negligible
6-20	19.3	17.9	18.3	0.5	Small	Negligible
6-21	19.0	17.6	18.0	0.4	Small	Negligible
6-22	20.0	18.5	18.7	0.2	Imperceptible	Negligible
6-23	24.7	22.9	23.0	0.1	Imperceptible	Negligible
6-24	27.5	25.2	26.2	0.9	Small	Negligible
6-25	22.2	20.7	21.0	0.3	Imperceptible	Negligible
6-26	22.4	20.8	20.9	0.1	Imperceptible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Magnitude of change	Impact descriptor
	2012 baseline	2017 without Proposed Scheme	2017 with Proposed Scheme			
6-27	19.4	18.0	17.9	0.0	Imperceptible	Negligible
6-28	19.0	17.7	17.8	0.1	Imperceptible	Negligible
6-29	18.6	17.3	17.3	-0.1	Imperceptible	Negligible
6-30	19.2	17.8	17.7	-0.1	Imperceptible	Negligible
6-31	26.0	24.0	24.8	0.8	Small	Negligible
6-32	24.1	22.3	23.0	0.7	Small	Negligible
6-33	23.1	21.3	22.0	0.7	Small	Negligible
6-34	20.2	18.8	19.4	0.6	Small	Negligible

Table 17: Summary of ADMS-Roads 24-hour mean PM10 results (construction phase)

Receptor	Number days exceeding PM10 24-hour standard			Change in days	Magnitude of change	Impact descriptor
	2012 baseline	2017 without Proposed Scheme	2017 with Proposed Scheme			
6-5	2.8	1.4	1.4	0.0	Imperceptible	Negligible
6-8	3.0	1.5	1.8	0.3	Imperceptible	Negligible
6-10	8.4	5.6	6.3	0.6	Imperceptible	Negligible
6-18	11.1	7.5	8.0	0.5	Imperceptible	Negligible
6-20	2.6	1.3	1.7	0.4	Imperceptible	Negligible
6-21	2.3	1.1	1.4	0.3	Imperceptible	Negligible
6-22	3.4	1.8	2.0	0.2	Imperceptible	Negligible

Receptor	Number days exceeding PM10 24-hour standard			Change in days	Magnitude of change	Impact descriptor
	2012 baseline	2017 without Proposed Scheme	2017 with Proposed Scheme			
6-23	11.8	8.0	8.2	0.2	Imperceptible	Negligible
6-24	19.2	13.0	15.3	2.4	Medium	Negligible
6-25	6.6	4.3	4.7	0.4	Imperceptible	Negligible
6-26	7.0	4.5	4.6	0.1	Imperceptible	Negligible
6-27	2.7	1.4	1.4	0.0	Imperceptible	Negligible
6-28	2.3	1.2	1.2	0.1	Imperceptible	Negligible
6-29	1.9	0.9	0.9	0.0	Imperceptible	Negligible
6-30	2.5	1.3	1.2	-0.1	Imperceptible	Negligible
6-31	15.0	10.2	11.9	1.7	Small	Negligible
6-32	10.4	6.8	8.0	1.2	Small	Negligible
6-33	8.3	5.2	6.3	1.1	Small	Negligible
6-34	3.7	2.1	2.7	0.6	Imperceptible	Negligible

Assessment of significance

5.3.9 The significance of the impacts on air quality from construction traffic associated with the Proposed Scheme has been assessed in accordance with the EPUK methodology[27]. AQMAs cover much of the study area and air quality standards are not met in many locations, particularly along major roads.

5.3.10 The DMRB assessment identified a number of receptors where there may be moderate or substantial adverse air quality impacts from traffic during the construction phase.

5.3.11 The ADMS-Roads assessment predicted that there will be numerous locations where air quality standards are exceeded, with and without the Proposed Scheme, and where concentrations of NO2 and PM10 increase with the Proposed Scheme.

5.3.12 NO2 impacts during the construction phase are predicted to be substantial adverse at receptors on:

- Swakeleys Road, between the A40 Western Avenue and Breakspear Road (multiple receptors);
- Warren Road, close to the junction with Swakeleys Road;
- Roker Park Avenue, close to the junction with Swakeleys Road; and
- Shorediche Close, at the façade closest to Swakeleys Road.

5.3.13 NO2 impacts during the construction phase are predicted to be moderate adverse at receptors on:

- Woodhall Close, at two properties with rear facades close to the A40 Western Avenue; and
- Park Road, close to the junction with the A40 Western Avenue.

5.3.14 PM10 impacts (in relation to the 24-hour standard) during the construction phase are predicted to be negligible.

5.3.15 The NO2 impacts will give rise to significant effects. These will, however, be of limited spatial extent, close to roads affected by changes in traffic, and of limited duration.

5.4 Operational traffic model

Receptors assessed

5.4.1 No traffic links meeting the DMRB criteria were identified within the study area for the operational assessment. As such, no receptors were assessed and changes in air quality are considered negligible.

Assessment of significance

5.4.2 There will be no significant effects arising from the negligible changes to air quality caused by traffic during operation.

6 Air quality assessment - rail head

6.1.1 There will be additional train movements at the rail head to move 1.7 million cubic metres of material from London. This is equivalent to 16 train movements a day for 18 months or 12 train movements a day for two years.

6.1.2 There are no residential buildings within 30m of the railway tracks at the rail head and therefore any impacts associated with the rail head will be negligible. These impacts will not be a significant effect.

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